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=> file reg
FILE 'REGISTRY' ENTERED AT 13:03:50 ON 31 JUL 2002
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STRUCTURE FILE UPDATES:   30 JUL 2002  HIGHEST RN 441272-85-1
DICTIONARY FILE UPDATES:  30 JUL 2002  HIGHEST RN 441272-85-1

TSCA INFORMATION NOW CURRENT THROUGH January 7, 2002

  Please note that search-term pricing does apply when
  conducting SmartSELECT searches.

Crossover limits have been increased.  See HELP CROSSOVER for details.

Calculated physical property data is now available.  See HELP PROPERTIES
for more information.  See STNote 27, Searching Properties in the CAS
Registry File, for complete details:
http://www.cas.org/ONLINE/STN/STNOTES/stnotes27.pdf

=> d his

     (FILE 'HCAPLUS' ENTERED AT 10:20:44 ON 31 JUL 2002)
                DEL HIS Y
L1           9449 S IWAMOTO ?/AU
L2            217 S KOSHINA ?/AU
L3           3291 S SHIMAMURA ?/AU
L4           4858 S NITTA ?/AU
L5              1 S L1 AND L2 AND L3 AND L4
                  SEL L5 1 RN

     FILE 'REGISTRY' ENTERED AT 10:23:25 ON 31 JUL 2002
L6             10 S E1-E10
                  E LITHIUM/CN
L7              1 S E3
                  E SILICON/CN
L8              1 S E3
                  E TIN/CN
L9              1 S E3
                  E ZINC/CN
L10             1 S E3

     FILE 'HCAPLUS' ENTERED AT 10:40:57 ON 31 JUL 2002
L11        176635 S BATTERY OR BATTERIES OR (ELECTROCHEM? OR ELECTROLY? OR
L12        388472 S ELECTROLY?
L13         38195 S NONAQUEOUS? OR NONAQ# OR NON(2A)(AQ# OR AQUEOUS?)
L14               QUE L7 OR LITHIUM# OR LITHIAT? OR LI
L15        326682 S L8
L16         63798 S L9
L17        209994 S L10
L18        168843 S SOLIDSOLUTION? OR SOLIDSOLN# OR SOLID?(2A)(SOLN# OR SOL
```

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L19        46257 S INTERMETAL? OR INTER(A)METAL?
                 E ALKALINE EARTH METALS/CV
L20         7599 S E3
                 E GROUP IIB ELEMENTS/CV
L21          765 S E3
                 E GROUP IIIA ELEMENTS/CV
L22         1828 S E3
                 E GROUP IVA ELEMENTS/CV
L23         1694 S E3

     FILE 'LCA' ENTERED AT 10:47:21 ON 31 JUL 2002

     FILE 'HCAPLUS' ENTERED AT 10:53:49 ON 31 JUL 2002
L24        33299 S INTERCALAT?
L25         1255 S DEINTERCALAT? OR DE(A)INTERCALAT?

     FILE 'LCA' ENTERED AT 10:53:50 ON 31 JUL 2002
L26          204 S ENCAPSUL? OR CAPSUL?
L27         7645 S (FILM? OR THINFILM? OR LAYER? OR OVERLAY? OR OVERLAID?
L28         5586 S (PARTICL? OR MICROPARTICL? OR PARTICULAT? OR DUST? OR G
L29         5560 S PARTICL? OR MICROPARTICL? OR PARTICULAT? OR DUST? OR GR

     FILE 'HCAPLUS' ENTERED AT 10:58:36 ON 31 JUL 2002
L30       113896 S (ENCOAT? OR L26 OR L27)(2A)L29
L31         5907 S L11 AND L12 AND L13 AND L14
L32          111 S L31 AND L30
L33            9 S L32 AND (L15 OR L16 OR L17)
L34            5 S L32 AND (L18 OR L19)
L35            0 S L32 AND (L20-L23)
L36           32 S L32 AND (L24 OR L25)
L37            1 S L32 AND L24 AND L25
L38          178 S L31 AND (L15 OR L16 OR L17)
L39           19 S L38 AND (L18 OR L19)
L40            3 S L39 AND (L20-L23)
L41            8 S L38 AND (L20-L23)
L42           56 S L38 AND (L24 OR L25)
L43            2 S L38 AND L24 AND L25
L44            6 S L42 AND L39
L45            8 S L31 AND (L15 OR L16 OR L17) AND (L20-L23)

     FILE 'REGISTRY' ENTERED AT 11:11:25 ON 31 JUL 2002
               ACT EOEGPOPG/A
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L46 (       9682)SEA FILE=REGISTRY 75-21-8/CRN
L47 (      21863)SEA FILE=REGISTRY 107-21-1/CRN
L48 (       9283)SEA FILE=REGISTRY 75-56-9/CRN
L49 (       8413)SEA FILE=REGISTRY 57-55-6/CRN
L50 (       7690)SEA FILE=REGISTRY (L46 OR L47) AND (L48 OR L49)
L51           11 SEA FILE=REGISTRY L50 AND 2/NC
                 ---------
                 E POLYACRYLONITRILE/CN
L52            1 S E3
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                E POLYVINYLIDENE FLUORIDE/CN
                E VINYLIDENE FLUORIDE, HOMOPOLYMER/CN
                E VINYLIDENE FLUORIDE POLYMER/CN
L53           1 S E3
                E POLYHEXAFLUOROPROPYLENE/CN
                E HEXAFLUOROPROPYLENE POLYMER/CN
L54           1 S E3
                E POLYTETRAFLUOROETHYLENE/CN
L55           1 S E3
                E TRIFLUOROMETHYL VINYL ETHER POLYMER/CN
L56           1 S E2
L57          17 S 1645-89-2/CRN
L58           1 S L57 AND 1/NC
L59           5 S L52 OR L53 OR L54 OR L55 OR L58

     FILE 'HCAPLUS' ENTERED AT 11:30:50 ON 31 JUL 2002
L60       54091 S L59
L61       14255 S L51
L62          21 S L38 AND (L60 OR L61)
L63           0 S L38 AND (POLYESTER# OR POLY(2A)ESTER#)
L64             QUE GEL OR GELS OR GELLED OR GELLING# OR GELATION?
L65           1 S L62 AND L64
L66           1 S L62 AND (L18 OR L19)
L67           1 S L62 AND (L20-L23)
L68           8 S L62 AND (L24 OR L25)
L69           0 S L62 AND L30
L70           3 S L65 OR L66 OR L67
L71           6 S L68 NOT L70
L72          12 S L62 NOT (L70 OR L71)
L73          11 S L34 OR L37 OR L40 OR L43
L74          16 S (L33 OR L41 OR L44 OR L45) NOT L73

     FILE 'LCA' ENTERED AT 11:44:51 ON 31 JUL 2002

     FILE 'HCAPLUS' ENTERED AT 11:46:37 ON 31 JUL 2002
L75       32404 S (COMPOSITE# OR CORE# OR CORING# OR CENTER? OR CENTRAL?)
L76          86 S (L11 OR L12 OR L13 OR L14) AND (L15 OR L16 OR L17) AND
L77           5 S L76 AND (L20-L23)
L78          19 S L76 AND (L18 OR L19)
L79           7 S L76 AND (L24 OR L25)
L80          26 S L76 AND L30
L81           3 S L78 AND L80
L82           9 S (L77 OR L79 OR L81) NOT L73
L83          20 S L77 OR L79 OR L81 OR L73
L84          13 S L74 NOT L83

     FILE 'REGISTRY' ENTERED AT 13:02:48 ON 31 JUL 2002

     FILE 'HCA' ENTERED AT 13:03:10 ON 31 JUL 2002

     FILE 'REGISTRY' ENTERED AT 13:03:50 ON 31 JUL 2002
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=> file hcaplus
FILE 'HCAPLUS' ENTERED AT 13:03:58 ON 31 JUL 2002
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
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FILE COVERS 1907 - 31 Jul 2002 VOL 137 ISS 5
FILE LAST UPDATED: 30 Jul 2002 (20020730/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

CAS roles have been modified effective December 16, 2001. Please check your SDI profiles to see if they need to be revised. For information on CAS roles, enter HELP ROLES at an arrow prompt or use the CAS Roles thesaurus (/RL field) in this file.

=> d l70 1-3 ibib abs hitstr hitind

L70 ANSWER 1 OF 3 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2000:757024 HCAPLUS
DOCUMENT NUMBER: 133:337711
TITLE: **Nonaqueous electrolyte secondary cell**
INVENTOR(S): Shimamura, Harunari; Nitta, Yoshiaki
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
SOURCE: PCT Int. Appl., 29 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000063986	A1	20001026	WO 2000-JP2502	20000418
W: US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
JP 2001006677	A2	20010112	JP 2000-114799	20000417
JP 2001006667	A2	20010112	JP 2000-114800	20000417

EP 1109239 A1 20010620 EP 2000-917330 20000418
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI
PRIORITY APPLN. INFO.: JP 1999-112073 A 19990420
JP 1999-112074 A 19990420
WO 2000-JP2502 W 20000418

AB A **nonaq. electrolyte secondary cell** comprises a neg. electrode which comprises, as its main material, composite particles having nuclear particles comprising at least one constituent element selected from tin, silicon and zinc and, covering at least a part of the circumference thereof, a **solid soln.** or an **intermetallic** compd. of the constituent element with at least one element selected from the group consisting of 2 Group elements exclusive of the constituent elements of nuclear particles, transition elements, Group 12 elements, Group 13 elements and Group14 elements exclusive of carbon of the Periodic Table, and in that the **lithium** occluded in the composite particles has a NMR signal in the range of -10 to 40 ppm and also at least one other signal in the range of -10 to 4 ppm. The **nonaq. electrolyte secondary cell** has higher energy d. and improved in life characteristics in charge-discharge cycle, as compared to a conventional cell using a carbon material for a neg. electrode.

IT **7440-21-3**, Silicon, uses **7440-31-5**, Tin, uses **7440-66-6**, Zinc, uses
(neg. electrode in **nonaq. electrolyte secondary cell** contg.)

RN 7440-21-3 HCAPLUS
CN Silicon (7CI, 8CI, 9CI) (CA INDEX NAME)

Si

RN 7440-31-5 HCAPLUS
CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

RN 7440-66-6 HCAPLUS
CN Zinc (7CI, 8CI, 9CI) (CA INDEX NAME)

Zn

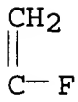
IT **24937-79-9**, PVDF
(pos. electrode in **nonaq. electrolyte secondary cell** contg.)

RN 24937-79-9 HCAPLUS

CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M004-38
ICS H01M004-02; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **nonaq electrolyte secondary cell**
IT Secondary **batteries**
(**nonaq. electrolyte; nonaq. electrolyte secondary cell**)
IT Fluoropolymers, uses
(pos. electrode in **nonaq. electrolyte secondary cell** contg.)
IT 1313-08-2 **7440-21-3**, Silicon, uses **7440-31-5**, Tin, uses **7440-66-6**, Zinc, uses 11099-22-2 11109-57-2 11110-87-5 11124-13-3 11125-88-5 11143-56-9 11149-84-1 12017-12-8, Cobalt silicide CoSi2 12023-01-7 12057-70-4 12201-89-7, Nickel silicide NiSi2 22831-39-6, Magnesium silicide Mg2Si 37230-21-0 51844-78-1 74946-92-2 96755-45-2 144692-49-9 303985-97-9
(neg. electrode in **nonaq. electrolyte secondary cell** contg.)
IT 7440-44-0, Carbon, uses 12190-79-3, **Lithium** cobalt oxide LiCoO2 **24937-79-9**, PVDF
(pos. electrode in **nonaq. electrolyte secondary cell** contg.)
REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L70 ANSWER 2 OF 3 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2000:49109 HCAPLUS
DOCUMENT NUMBER: 132:110582
TITLE: **Nonaqueous** secondary **batteries**
INVENTOR(S): Tomiyama, Hideki
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 21 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000021449	A2	20000121	JP 1998-186328	19980701

AB The **batteries** comprise a **Li**-contg. transition metal oxide cathode, a **Li**-intercalating Si-contg. anode, and a **electrolyte gel** contg. (a) org. polymer, (b) non-protonic solvent, and (c) ammonium, alkali metal, or alk. earth metal salt. The **batteries** have excellent charge-discharge cycle characteristics.

IT **7440-21-3**, Silicon, uses
(anode; **lithium** secondary **batteries** with polymer **gel electrolytes**)

RN 7440-21-3 HCAPLUS
CN Silicon (7CI, 8CI, 9CI) (CA INDEX NAME)

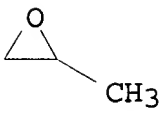
Si

IT **9003-11-6**, Ethylene oxide-propylene oxide copolymer **24937-79-9**, Poly(vinylidene fluoride) **25014-41-9**, Polyacrylonitrile
(**lithium** secondary **batteries** with polymer **gel electrolytes**)

RN 9003-11-6 HCAPLUS
CN Oxirane, methyl-, polymer with oxirane (9CI) (CA INDEX NAME)

CM 1

CRN 75-56-9
CMF C3 H6 O



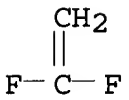
CM 2

CRN 75-21-8
CMF C2 H4 O

RN 24937-79-9 HCAPLUS
CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

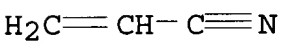
CRN 75-38-7
CMF C2 H2 F2



RN 25014-41-9 HCAPLUS
CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1
CMF C3 H3 N



IC ICM H01M010-40
ICS H01M010-40; H01M004-02; H01M004-58
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **nonaq** secondary **battery gel electrolyte**; oxyalkylene vinyl polymer **gel electrolyte battery**
IT **Gels**
(**electrolyte**; **lithium** secondary **batteries** with polymer **gel electrolytes**)
IT **Battery electrolytes**
Polymer **electrolytes**
Secondary **batteries**
(**lithium** secondary **batteries** with polymer **gel electrolytes**)
IT Fluoropolymers, uses
Polyoxyalkylenes, uses
(**lithium** secondary **batteries** with polymer **gel electrolytes**)
IT Polyphosphazenes
Polyphosphazenes
Polysiloxanes, uses
Polysiloxanes, uses
(polyoxyalkylene-, graft, **lithium** complex; **lithium** secondary **batteries** with polymer

gel electrolytes)

IT Polyoxyalkylenes, uses
Polyoxyalkylenes, uses
(polyphosphazene-, graft, **lithium** complex; **lithium** secondary **batteries** with polymer **gel electrolytes**)

IT Polyoxyalkylenes, uses
Polyoxyalkylenes, uses
(polysiloxane-, graft, **lithium** complex; **lithium** secondary **batteries** with polymer **gel electrolytes**)

IT 7440-02-0, Nickel, uses
(-coated silicon anode; **lithium** secondary **batteries** with polymer **gel electrolytes**)

IT **7440-21-3**, Silicon, uses 7631-86-9, Silica, uses 193072-79-6
(anode; **lithium** secondary **batteries** with polymer **gel electrolytes**)

IT 12190-79-3, Cobalt **lithium** oxide (CoLiO2)
(cathode; **lithium** secondary **batteries** with polymer **gel electrolytes**)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate
(**electrolyte** solvent; **lithium** secondary **batteries** with polymer **gel electrolytes**)

IT 21324-40-3, **Lithium** hexafluorophosphate
(**electrolyte**; **lithium** secondary **batteries** with polymer **gel electrolytes**)

IT **9003-11-6**, Ethylene oxide-propylene oxide copolymer 9011-17-0 **24937-79-9**, Poly(vinylidene fluoride) 24968-79-4, Acrylonitrile-methyl acrylate copolymer **25014-41-9**, Polyacrylonitrile 25067-61-2, Polymethacrylonitrile 25322-68-3 25322-69-4 29613-70-5 50867-60-2, Acrylonitrile-methyl vinyl ether copolymer 98973-15-0 115401-75-7 255897-37-1 255897-39-3 255897-40-6 255897-42-8 255897-44-0 255897-45-1 255897-46-2 255897-47-3 255897-48-4
(**lithium** secondary **batteries** with polymer **gel electrolytes**)

L70 ANSWER 3 OF 3 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1999:814058 HCAPLUS
DOCUMENT NUMBER: 132:52390
TITLE: **Nonaqueous-electrolyte** secondary **batteries** with improved electrodes
INVENTOR(S): Miyasaka, Isao
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 17 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent

LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11354118	A2	19991224	JP 1998-159336	19980608

AB The title **battery** uses anodes from **Li** -intercalatable Si-contg. compds., and cathodes from .alpha.-NaFeO2- or spinel-type **Li** mixed oxides, which contain (1) Co, Ni, Mn, and/or Fe, (2) .ltoreq.0.1 wt.% alk. earth metal, and (3) .ltoreq.0.1 wt.% S.

IT **7440-66-6**, Zinc, uses **24937-79-9**, Poly(vinylidene fluoride)
(coatings; secondary **Li battery** using anodes from Si compd. and cathodes from **Li** mixed oxide)

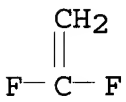
RN 7440-66-6 HCAPLUS
CN Zinc (7CI, 8CI, 9CI) (CA INDEX NAME)

Zn

RN 24937-79-9 HCAPLUS
CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 75-38-7
CMF C2 H2 F2



IT **7440-21-3**, Silicon, uses
(secondary **Li battery** using anodes from Si compd. and cathodes from **Li** mixed oxide)

RN 7440-21-3 HCAPLUS
CN Silicon (7CI, 8CI, 9CI) (CA INDEX NAME)

Si

IC ICM H01M004-58
ICS H01M004-02; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **battery** anode silicon **lithium** intercalation; cathode **battery lithium** oxide

IT Fluoropolymers, uses
(coatings; secondary **Li battery** using anodes from Si compd. and cathodes from **Li** mixed oxide)
IT **Battery** anodes
Battery cathodes
Secondary **batteries**
(secondary **Li battery** using anodes from Si compd. and cathodes from **Li** mixed oxide)
IT **Alkaline earth metals**
(secondary **Li battery** using anodes from Si compd. and cathodes from **Li** mixed oxide)
IT 7440-02-0, Nickel, uses 7440-22-4, Silver, uses **7440-66-6**, Zinc, uses **24937-79-9**, Poly(vinylidene fluoride)
(coatings; secondary **Li battery** using anodes from Si compd. and cathodes from **Li** mixed oxide)
IT **7440-21-3**, Silicon, uses 7631-86-9, Silica, uses 11133-86-1 11148-22-4 12719-63-0 51969-29-0 96755-45-2 113066-89-0, Cobalt **lithium** nickel oxide ($Co_{0.2}LiNi_{0.8}O_2$) 216385-53-4 252905-19-4, Cobalt **lithium** nickel borate oxide ($Co_{0.15}LiNi_{0.8}(BO_3)_{0.05}O_{1.95}$) 252905-25-2, Cobalt **lithium** manganese oxide ($Co_{0.05}Li_{1.05}Mn_{1.95}O_{4.05}$) 252905-30-9, Cobalt **lithium** manganese oxide ($Co_{0.05}Li_{1.05}Mn_{1.95}O_{3.95}$) 252905-33-2 252905-35-4 252905-37-6 252905-41-2
(secondary **Li battery** using anodes from Si compd. and cathodes from **Li** mixed oxide)
IT 7704-34-9, Sulfur, processes
(secondary **Li battery** using anodes from Si compd. and cathodes from **Li** mixed oxide)

=> d l71 1-6 ibib abs hitstr hitind

L71 ANSWER 1 OF 6 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2002:486325 HCAPLUS
DOCUMENT NUMBER: 137:35551
TITLE: **Nonaqueous electrolyte** secondary **battery** with improved safety
INVENTOR(S): Saisho, Keiji; Watanabe, Hiroshi; Nakane, Ikuro; Narukawa, Satoshi; Tsujioka, Norio
PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan
SOURCE: Eur. Pat. Appl., 25 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1217671	A2	20020626	EP 2001-130748	20011221
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,				

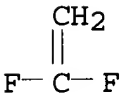
PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
JP 2002190294 A2 20020705 JP 2000-389685 20001222
PRIORITY APPLN. INFO.: JP 2000-389685 A 20001222
AB In a **nonaq. secondary cell** having a pos. electrode, a neg. electrode, a **nonaq. electrolyte**, a separator interposed between the pos. electrode and the neg. electrode, the pos. electrode having a pos. electrode active material including a chem. compd. capable of reversibly **intercalating lithium** and the neg. electrode having a neg. electrode active material including a material capable of reversibly **intercalating lithium**, the separator has through holes formed therein for passing **lithium** dendrites there-through.
IT **7440-21-3**, Silicon, uses **24937-79-9**, Pvdf
(**nonaq. electrolyte** secondary **battery** with improved safety)
RN 7440-21-3 HCAPLUS
CN Silicon (7CI, 8CI, 9CI) (CA INDEX NAME)

Si

RN 24937-79-9 HCAPLUS
CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M002-18
ICS H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **battery nonaq** secondary improved safety; safety improvement **battery nonaq** secondary
IT Secondary **batteries**
(**lithium**; **nonaq. electrolyte** secondary **battery** with improved safety)
IT Safety
Secondary **battery** separators
(**nonaq. electrolyte** secondary **battery** with improved safety)
IT Fluoropolymers, uses
Polyoxyalkylenes, uses
(**nonaq. electrolyte** secondary **battery**

with improved safety)
IT 1332-29-2, Tin oxide **7440-21-3**, Silicon, uses 7782-42-5, Graphite, uses 9011-14-7, Pmma **24937-79-9**, Pvdf 25322-68-3, Peo
(**nonaq. electrolyte** secondary **battery** with improved safety)

L71 ANSWER 2 OF 6 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:366646 HCAPLUS
DOCUMENT NUMBER: 134:342560
TITLE: **Nonaqueous** secondary **battery** containing silicic material
INVENTOR(S): Idota, Yoshio; Matsufuji, Akihiro; Mori, Nobufumi; Kase, Akira; Kagawa, Yoshikatsu; Miyamoto, Hajime
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: U.S., 19 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

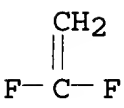
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6235427	B1	20010522	US 1999-309309	19990511
JP 2000003727	A2	20000107	JP 1998-165501	19980612
JP 2000036323	A2	20000202	JP 1998-167446	19980615
JP 2000012018	A2	20000114	JP 1998-171665	19980618

PRIORITY APPLN. INFO.:
JP 1998-130836 A 19980513
JP 1998-165501 A 19980612
JP 1998-167446 A 19980615
JP 1998-171665 A 19980618

AB A **nonaq.** secondary **battery** is disclosed, comprising a pos. electrode having a pos. electrode active material, a neg. electrode having a neg. electrode material, and a **nonaq. electrolyte**, wherein the pos. electrode active material is a transition metal oxide capable of **intercalating** and **deintercalating lithium**, and the neg. electrode material comprises at least one silicic material capable of **intercalating** and **deintercalating lithium** selected from silicon, a silicon alloy and a silicide, and a process for producing the **nonaq.** secondary **battery** is disclosed.
IT **24937-79-9**, Poly(vinylidene fluoride)
(binder; **nonaq.** secondary **battery** contg. silicic material)
RN 24937-79-9 HCAPLUS
CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 75-38-7
CMF C2 H2 F2



IT **7440-66-6**, Zinc, uses
(coating; **nonaq**. secondary **battery** contg. silicic material)
RN 7440-66-6 HCAPLUS
CN Zinc (7CI, 8CI, 9CI) (CA INDEX NAME)

Zn

IT **7439-93-2**, **Lithium**, uses
(**nonaq**. secondary **battery** contg. silicic material)
RN 7439-93-2 HCAPLUS
CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

IT **7440-21-3**, Silicon, uses
(**nonaq**. secondary **battery** contg. silicic material)
RN 7440-21-3 HCAPLUS
CN Silicon (7CI, 8CI, 9CI) (CA INDEX NAME)

Si

IC ICM H01M004-58
NCL 429218100
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **battery** anode silicic material
IT Fluoropolymers, uses
(binder; **nonaq**. secondary **battery** contg. silicic material)
IT Ceramics
(coating; **nonaq**. secondary **battery** contg. silicic material)
IT Metals, uses
(coating; **nonaq**. secondary **battery** contg. silicic material)

IT **Intercalation**
(electrochem.; **nonaq**. secondary **battery** contg. silicic material)
IT Secondary **batteries**
(**lithium**; **nonaq**. secondary **battery** contg. silicic material)
IT **Battery** anodes
(**nonaq**. secondary **battery** contg. silicic material)
IT Carbon black, uses
(**nonaq**. secondary **battery** contg. silicic material)
IT Plastics, uses
(thermoplastics, coating; **nonaq**. secondary **battery** contg. silicic material)
IT Silicon alloy, base
(**nonaq**. secondary **battery** contg. silicic material)
IT **24937-79-9**, Poly(vinylidene fluoride)
(binder; **nonaq**. secondary **battery** contg. silicic material)
IT 7440-02-0, Nickel, uses 7440-22-4, Silver, uses **7440-66-6**, Zinc, uses
(coating; **nonaq**. secondary **battery** contg. silicic material)
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 1344-28-1, Alumina, uses 7440-44-0, Carbon, uses 7631-86-9, Silica, uses 12190-79-3, Cobalt **lithium** oxide colio2 12675-05-7 14283-07-9, **Lithium** tetrafluoroborate 21324-40-3, **Lithium** hexafluorophosphate 116226-26-7 120440-46-2 145634-33-9 174180-05-3, Cobalt **lithium** oxide CoLi0-1.2O2 174180-06-4, **Lithium** nickel oxide Li0-1.2NiO2 214636-25-6 214636-26-7 253432-73-4 253432-74-5 253432-75-6 253432-76-7 296800-04-9, **Lithium** manganese oxide Li0-1.2MnO2 338459-39-5, Iron **lithium** oxide (FeLi0-1.2O2) 338459-40-8 338459-41-9 338459-42-0 338459-43-1 338459-44-2 338459-45-3 338459-46-4 338459-47-5
(**nonaq**. secondary **battery** contg. silicic material)
IT 68848-64-6
(**nonaq**. secondary **battery** contg. silicic material)
IT **7439-93-2**, **Lithium**, uses
(**nonaq**. secondary **battery** contg. silicic material)
IT 7782-42-5, Graphite, uses
(**nonaq**. secondary **battery** contg. silicic material)
IT **7440-21-3**, Silicon, uses
(**nonaq**. secondary **battery** contg. silicic material)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR

THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L71 ANSWER 3 OF 6 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2000:513424 HCAPLUS
DOCUMENT NUMBER: 133:107439
TITLE: Spinel type oxide cathode for **nonaqueous electrolyte battery** with **lithium intercalating** anode
INVENTOR(S): Narukawa, Satoshi; Imachi, Naoko; Nakamizo, Shiori
PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan
SOURCE: Eur. Pat. Appl., 28 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1022792	A1	20000726	EP 2000-101444	20000125
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2000215884	A2	20000804	JP 1999-16141	19990125
TW 431012	B	20010421	TW 1999-88120664	19991126
KR 2000052412	A	20000825	KR 1999-54801	19991203
CN 1262532	A	20000809	CN 1999-126373	19991217

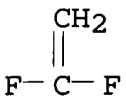
PRIORITY APPLN. INFO.: JP 1999-16141 A 19990125

AB A cathode for a **nonaq. electrolyte cell** is comprised of a mixt. of spinel-type **lithium** manganese oxide represented by a formula Li1+xMn2-yO4 (provided that the at. ratio of **lithium** and manganese is detd. to be 0.56 .ltoreq. **Li**/Mn [=(1+x)/(2-y)] .ltoreq.0.62, x is detd. to be 0.2 .ltoreq. x .ltoreq. 0.2, and y is detd. to be y .ltoreq. 1.0) and at least either one of **lithium** cobalt oxide represented by a formula Li1+zCoO2 (provided that z is detd. to be 0.5 .ltoreq. z .ltoreq. 0.5) or **lithium** nickel oxide represented by a formula Li1+zNiO2 (provided that z is detd. to be 0.5 .ltoreq. z .ltoreq. 0.5), and wherein in the case that the wt. of spinel-type manganese oxide is defined as A and that the wt. of the **lithium** cobalt oxide or **lithium** nickel oxide is defined as B, the amt. of **lithium** cobalt oxide or **lithium** nickel oxide is detd. to be 0.05 .ltoreq. B/(A + B) < 0.2.

IT **24937-79-9**, Pvdf **25014-41-9**, Polyacrylonitrile
(spinel type oxide cathode for **nonaq. electrolyte battery** with **lithium intercalating** anode)
RN 24937-79-9 HCAPLUS
CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

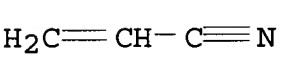
CRN 75-38-7
CMF C2 H2 F2



RN 25014-41-9 HCAPLUS
CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1
CMF C3 H3 N



IT **7440-31-5**, Tin, uses **7440-66-6**, Zinc, uses
(spinel type oxide cathode for **nonaq**. **electrolyte battery** with **lithium** **intercalating** anode)
RN 7440-31-5 HCAPLUS
CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

RN 7440-66-6 HCAPLUS
CN Zinc (7CI, 8CI, 9CI) (CA INDEX NAME)

Zn

IC ICM H01M004-48
ICS H01M010-40; C01G045-02
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **lithium** manganese oxide cathode **battery**; cobalt **lithium** oxide cathode **battery**; nickel **lithium** oxide cathode **battery**
IT Secondary **batteries**
(**lithium**; spinel type oxide cathode for **nonaq** **electrolyte battery** with **lithium** **intercalating** anode)

IT **Battery** anodes
Battery cathodes
Polymer **electrolytes**
(spinel type oxide cathode for **nonaq. electrolyte battery** with **lithium intercalating** anode)

IT Fluoropolymers, uses
Polycarbonates, uses
Polyoxyalkylenes, uses
(spinel type oxide cathode for **nonaq. electrolyte battery** with **lithium intercalating** anode)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 7791-03-9, **Lithium** perchlorate 14283-07-9, **Lithium** tetrafluoroborate 21324-40-3, **Lithium** hexafluorophosphate **24937-79-9**, Pvdf **25014-41-9**, Polyacrylonitrile 25322-68-3, Polyethylene glycol 39300-70-4, **Lithium** nickel oxide 39457-42-6, **Lithium** manganese oxide 52627-24-4, Cobalt **lithium** oxide 132843-44-8 144973-00-2, Cobalt **lithium** oxide CoLi0.5-1.5O2 272128-41-3, **Lithium** manganese oxide Li0.8-1.2Mn2O4 282725-14-8, **Lithium** nickel oxide (Li0.5-1.5NiO2)
(spinel type oxide cathode for **nonaq. electrolyte battery** with **lithium intercalating** anode)

IT 7429-90-5, Aluminum, uses 7439-89-6, Iron, uses 7439-95-4, Magnesium, uses 7439-96-5, Manganese, uses 7439-98-7, Molybdenum, uses 7440-02-0, Nickel, uses 7440-03-1, Niobium, uses 7440-24-6, Strontium, uses **7440-31-5**, Tin, uses 7440-32-6, Titanium, uses 7440-47-3, Chromium, uses 7440-48-4, Cobalt, uses 7440-50-8, Copper, uses 7440-62-2, Vanadium, uses **7440-66-6**, Zinc, uses 7440-67-7, Zirconium, uses 7440-70-2, Calcium, uses
(spinel type oxide cathode for **nonaq. electrolyte battery** with **lithium intercalating** anode)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L71 ANSWER 4 OF 6 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2000:474471 HCAPLUS
DOCUMENT NUMBER: 133:91975
TITLE: Secondary **nonaqueous electrolyte batteries** using improved anodes
INVENTOR(S): Akagi, Ryuichi; Suzuki, Atsushi
PATENT ASSIGNEE(S): Kao Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF

DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000195520	A2	20000714	JP 1998-372734	19981228

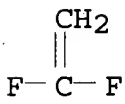
AB The **batteries** have cathodes contg. Li_{+}-**intercalatable** active materials and anodes comprising sintered bodies (BET sp. surface area 1-100 m2/g) from Si (compd.) active materials, fired binders, and optional carbonaceous elec. conductors. The **batteries** show low irreversible capacity.

IT **24937-79-9**, Poly(vinylidene fluoride)
(binder; secondary **nonaq. electrolyte Li batteries** using surface area-controlled sintered Si/C anodes for low irreversible capacity)

RN 24937-79-9 HCAPLUS
CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 75-38-7
CMF C2 H2 F2



IT **7440-21-3**, Silicon, uses
(secondary **nonaq. electrolyte Li batteries** using surface area-controlled sintered Si/C anodes for low irreversible capacity)

RN 7440-21-3 HCAPLUS
CN Silicon (7CI, 8CI, 9CI) (CA INDEX NAME)

Si

IC ICM H01M004-62
ICS H01M004-02; H01M004-38; H01M004-58
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **nonaq electrolyte battery** silicon carbon anode; binder silicon sintered anode **lithium battery**

IT Fluoropolymers, uses
(binder; secondary **nonaq. electrolyte Li batteries** using surface area-controlled sintered Si/C anodes for low irreversible capacity)

IT Secondary **batteries**
(**lithium**; secondary **nonaq.**
electrolyte Li batteries using
surface area-controlled sintered Si/C anodes for low irreversible capacity)
IT **Battery** anodes
Binders
Pitch
(secondary **nonaq. electrolyte Li**
batteries using surface area-controlled sintered Si/C
anodes for low irreversible capacity)
IT 282098-25-3, Graphiton
(Graphiton; secondary **nonaq. electrolyte**
Li batteries using surface area-controlled
sintered Si/C anodes for low irreversible capacity)
IT **24937-79-9**, Poly(vinylidene fluoride)
(binder; secondary **nonaq. electrolyte**
Li batteries using surface area-controlled
sintered Si/C anodes for low irreversible capacity)
IT **7440-21-3**, Silicon, uses 7782-42-5, Graphite, uses
282097-96-5, HSB-S
(secondary **nonaq. electrolyte Li**
batteries using surface area-controlled sintered Si/C
anodes for low irreversible capacity)

L71 ANSWER 5 OF 6 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2000:32661 HCAPLUS
DOCUMENT NUMBER: 132:66679
TITLE: Secondary **nonaqueous**
electrolyte batteries and
their manufacture
INVENTOR(S): Suzuki, Ryuta
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 14 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000012091	A2	20000114	JP 1998-176261	19980623

AB The **batteries** use **Li** contg. transition metal oxide cathodes and **Li intercalating** Si contg. compd. anodes, obtained by drying a dispersion of a Si compd. in a water free liq. applied on a collector.
IT **7440-21-3**, Silicon, uses **24937-79-9**,
Polyvinylidene fluoride
(**nonaq.** dispersion media in **lithium**
intercalating silicon compd. anode manuf. for secondary
lithium batteries)

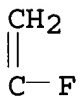
RN 7440-21-3 HCAPLUS
CN Silicon (7CI, 8CI, 9CI) (CA INDEX NAME)

Si

RN 24937-79-9 HCAPLUS
CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M010-40
ICS H01M004-02; H01M004-04; H01M004-58; H01M004-62
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST secondary **lithium battery** silicon compd anode manuf
IT **Battery** anodes
(**nonaq**. dispersion media in **lithium intercalating** silicon compd. anode manuf. for secondary **lithium batteries**)
IT Fluoropolymers, uses
(**nonaq**. dispersion media in **lithium intercalating** silicon compd. anode manuf. for secondary **lithium batteries**)
IT **7440-21-3**, Silicon, uses 7631-86-9, Silica, uses **24937-79-9**, Polyvinylidene fluoride 193072-79-6
(**nonaq**. dispersion media in **lithium intercalating** silicon compd. anode manuf. for secondary **lithium batteries**)
IT 872-50-4, N-Methylpyrrolidone, uses
(**nonaq**. dispersion media in **lithium intercalating** silicon compd. anode manuf. for secondary **lithium batteries**)

L71 ANSWER 6 OF 6 HCAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2000:32655 HCAPLUS
DOCUMENT NUMBER: 132:66676
TITLE: Secondary **nonaqueous electrolyte batteries**
INVENTOR(S): Mori, Nobufumi
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 15 pp.

CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000012088	A2	20000114	JP 1998-171664	19980618

AB The **batteries** use **Li** contg. transition metal oxide cathodes and **Li intercalating** Si compd. anodes, where the anode collectors are 5-100 .mu.m thick metal foils having av. surface roughness 0.03-1 .mu.m. The anode collectors are preferably Cu, Ni, Ti, their alloy, or stainless steel foils.

IT **7440-21-3**, Silicon, uses **24937-79-9**, Polyvinylidene fluoride
(metal foil collectors with controlled roughness for silicon compd. anodes in secondary **lithium batteries**)

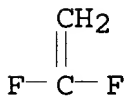
RN 7440-21-3 HCAPLUS
CN Silicon (7CI, 8CI, 9CI) (CA INDEX NAME)

Si

RN 24937-79-9 HCAPLUS
CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M010-40
ICS H01M004-02; H01M004-58; H01M004-64

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **battery lithium intercalating** silicon compd anode collector; roughness metal collector **lithium** silicon compd anode

IT **Battery** anodes
Surface roughness
(metal foil collectors with controlled roughness for silicon compd. anodes in secondary **lithium batteries**)

IT Fluoropolymers, uses
(metal foil collectors with controlled roughness for silicon compd. anodes in secondary **lithium batteries**)

IT **7440-21-3**, Silicon, uses 7631-86-9, Silica, uses 7782-42-5, Graphite, uses **24937-79-9**, Polyvinylidene fluoride 193072-79-6
(metal foil collectors with controlled roughness for silicon compd. anodes in secondary **lithium batteries**)

IT 7440-02-0, Nickel, uses 7440-32-6, Titanium, uses 7440-50-8, Copper, uses 11109-50-5, Sus 304
(metal foil collectors with controlled roughness for silicon compd. anodes in secondary **lithium batteries**)

=> d l72 1-12 ti

L72 ANSWER 1 OF 12 HCAPLUS COPYRIGHT 2002 ACS
TI **Nonaqueous electrolyte batteries**

L72 ANSWER 2 OF 12 HCAPLUS COPYRIGHT 2002 ACS
TI **Battery** with **nonaqueous electrolyte** and improved anode active material

L72 ANSWER 3 OF 12 HCAPLUS COPYRIGHT 2002 ACS
TI Secondary **nonaqueous electrolyte batteries**

L72 ANSWER 4 OF 12 HCAPLUS COPYRIGHT 2002 ACS
TI **Nonaqueous electrolyte** secondary **battery**

L72 ANSWER 5 OF 12 HCAPLUS COPYRIGHT 2002 ACS
TI Anode-active material used in **lithium** secondary **battery**

L72 ANSWER 6 OF 12 HCAPLUS COPYRIGHT 2002 ACS
TI Process for producing **lithium** secondary **battery**

L72 ANSWER 7 OF 12 HCAPLUS COPYRIGHT 2002 ACS
TI **Non-aqueous electrolytic** secondary **battery** and manufacture of the **battery**

L72 ANSWER 8 OF 12 HCAPLUS COPYRIGHT 2002 ACS
TI Anode for **nonaqueous** secondary **battery**

L72 ANSWER 9 OF 12 HCAPLUS COPYRIGHT 2002 ACS
TI Anode for secondary **battery** with **nonaqueous electrolyte**

L72 ANSWER 10 OF 12 HCAPLUS COPYRIGHT 2002 ACS
TI A **lithium** halide additive for a **nonaqueous battery**

L72 ANSWER 11 OF 12 HCAPLUS COPYRIGHT 2002 ACS
TI Cell having mixed solid cathode materials for controlling cell expansion on discharge

L72 ANSWER 12 OF 12 HCAPLUS COPYRIGHT 2002 ACS
TI Metallic reducing additive for solid cathodes used in **nonaqueous batteries**

=> d l72 1-12 cbib abs hitstr hitind

L72 ANSWER 1 OF 12 HCAPLUS COPYRIGHT 2002 ACS
2001:778299 Document No. 135:333316 **Nonaqueous electrolyte batteries**. Okada, Mikio; Yasuda, Hideo (Japan Storage Battery Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2001297792 A2 20011026, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-110416 20000412.
AB The **batteries** have an **electrolyte** soln. contg. 0.1 mM-0.1M F contg. ammonium salt complex and a polymer **electrolyte**. Preferably, the polymer **electrolyte** is attached to the anode.
IT **7440-21-3**, Silicon, uses **7440-31-5**, Tin, uses
(**electrolytes** contg. ammonium fluoride and carbon contg. polymers for secondary **lithium batteries**)
RN 7440-21-3 HCAPLUS
CN Silicon (7CI, 8CI, 9CI) (CA INDEX NAME)

Si

RN 7440-31-5 HCAPLUS
CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

IT **25014-41-9**, PAN
(**electrolytes** contg. ammonium fluoride and polymers for secondary **lithium batteries**)
RN 25014-41-9 HCAPLUS
CN 2-Propenenitrile, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 107-13-1
CMF C3 H3 N

$H_2C{=}CH{-}C{\equiv}N$

IC ICM H01M010-40

ICS H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST secondary **battery electrolyte** polymer ammonium fluoride
IT **Battery electrolytes**
(**electrolytes** contg. ammonium fluoride and polymers for secondary **lithium batteries**)
IT 7429-90-5, Aluminum, uses **7440-21-3**, Silicon, uses **7440-31-5**, Tin, uses 7782-42-5, Graphite, uses
(**electrolytes** contg. ammonium fluoride and carbon contg. polymers for secondary **lithium batteries**)
IT 96-49-1, Ethylene carbonate 110-71-4 7791-03-9, **Lithium** perchlorate **25014-41-9**, PAN
(**electrolytes** contg. ammonium fluoride and polymers for secondary **lithium batteries**)
IT 145826-81-9
(**electrolytes** contg. ammonium fluoride and polymers for secondary **lithium batteries**)

L72 ANSWER 2 OF 12 HCAPLUS COPYRIGHT 2002 ACS
2001:691889 Document No. 135:229387 **Battery** with **nonaqueous electrolyte** and improved anode active material. Inagaki, Hiroki; Takami, Norio (Kabushiki Kaisha Toshiba, Japan). Eur. Pat. Appl. EP 1134824 A2 20010919, 12 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 2001-302081 20010307. PRIORITY: JP 2000-72377 20000315.
AB The development of a new anode material led to the provision of a **battery** with **nonaq. electrolyte** which has a combination of a high discharge capacity with excellent cycling characteristics. The **battery** with **nonaq. electrolyte** comprises: a cathode and an anode having an anode active material capable of occluding and releasing an alkali metal. The anode active material contains .gtoreq.1 element selected from the group consisting of Group 4B elements and Group 5B elements and has .gtoreq.1 crystal structure selected from the group consisting of BiF3 structure, Cu2MnAl structure, and AgAsMg structure. The anode active material contains .gtoreq.1 element selected from the group consisting of Al, Si, Ge, Sn, P, Sb, and Bi and has .gtoreq.1 crystal structure selected from the group consisting of BiF3 structure, Cu2MnAl structure, and AgAsMg structure.
IT **7440-21-3**, Silicon, uses **7440-31-5**, Tin, uses
(**battery** with **nonaq. electrolyte** and improved anode active material)
RN 7440-21-3 HCAPLUS
CN Silicon (7CI, 8CI, 9CI) (CA INDEX NAME)

Si

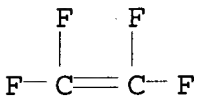
RN 7440-31-5 HCAPLUS
CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

IT **9002-84-0**, Ptfe **24937-79-9**, Pvdf
(binder; **battery** with **nonaq.**
electrolyte and improved anode active material)
RN 9002-84-0 HCAPLUS
CN Ethene, tetrafluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

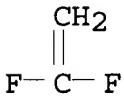
CRN 116-14-3
CMF C2 F4



RN 24937-79-9 HCAPLUS
CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M004-38
ICS H01M004-46; H01M004-48; H01M004-58
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 56
ST anode **battery nonaq electrolyte**
IT **Battery** anodes
Secondary **batteries**
(**battery** with **nonaq. electrolyte**
and improved anode active material)
IT Alkali metals, uses

Group IVB elements
Group VB elements
(**battery** with **nonaq. electrolyte** and improved anode active material)

IT Carbon black, uses
(**battery** with **nonaq. electrolyte** and improved anode active material)

IT Fluoro rubber
Fluoropolymers, uses
(binder; **battery** with **nonaq. electrolyte** and improved anode active material)

IT Synthetic rubber, uses
(butadiene-ethylene, binder; **battery** with **nonaq. electrolyte** and improved anode active material)

IT 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate 7429-90-5, Aluminum, uses **7440-21-3**, Silicon, uses **7440-31-5**, Tin, uses 7440-36-0, Antimony, uses 7440-56-4, Germanium, uses 7440-69-9, Bismuth, uses 7723-14-0, Phosphorus, uses 11056-42-1 11118-07-3 12003-42-8 12023-54-0, Iron silicide (Fe3Si) 12032-71-2 12059-23-3 12133-96-9 12163-59-6, Manganese silicide (Mn3Si) 12190-79-3, Cobalt **lithium** oxide colio2 12423-44-8 12502-69-1 12526-54-4 12526-55-5 12534-03-1 21324-40-3, **Lithium** hexafluorophosphate 60968-66-3 66590-17-8 75349-09-6 99787-36-7 105110-44-9 149571-46-0 149571-49-3 359783-12-3 359783-13-4 359783-14-5 359783-15-6 359783-16-7 359783-17-8, Antimony manganese nickel phosphide (Sb0.8MnNi2P0.2) 359783-18-9, Antimony cobalt manganese phosphide (Sb0.8Co2MnP0.2) 359783-19-0 359783-20-3 359783-21-4, Nickel tin titanium silicide (NiSn0.8TiSi0.2) 359783-22-5, Cobalt tin titanium silicide (CoSn0.8TiSi0.2) 359783-23-6 359783-24-7 359783-25-8 359783-26-9
(**battery** with **nonaq. electrolyte** and improved anode active material)

IT 7782-42-5, Graphite, uses
(**battery** with **nonaq. electrolyte** and improved anode active material)

IT **9002-84-0**, Ptfe 9004-32-4, Cmc **24937-79-9**, Pvdf
(binder; **battery** with **nonaq. electrolyte** and improved anode active material)

L72 ANSWER 3 OF 12 HCAPLUS COPYRIGHT 2002 ACS
2001:636404 Document No. 135:183333 Secondary **nonaqueous electrolyte batteries**. Okada, Mikio; Yasuda, Hideo (Japan Storage Battery Co., Ltd., Japan). PCT Int. Appl. WO 2001063687 A1 20010830, 29 pp. DESIGNATED STATES: W: CN, JP, US; RW: DE, FR, GB. (Japanese). CODEN: PIXXD2. APPLICATION: WO 2001-JP1249 20010221. PRIORITY: JP 2000-48344 20000224; JP 2000-48348 20000224.

AB The **batteries** have a cathode, an anode, a **nonaq. electrolyte** soln., and a polymer membrane contg. Si, Sn, and/or Al particles or a porous polymer membrane contg. C, Si, Sn,

and/or Al particles between the electrodes. Preferably, the polymer membrane is Li_+ conductive and in direct contact with the anode, and the anode is a **Li**, **Li** alloy, or carbonaceous anode.

IT **7440-21-3**, Silicon, uses **7440-31-5**, Tin, uses **24937-79-9**, Poly(vinylidene fluoride)
(polymer membranes contg. silicon and tin and aluminum and carbon particles for secondary **lithium batteries**)

RN 7440-21-3 HCAPLUS
CN Silicon (7CI, 8CI, 9CI) (CA INDEX NAME)

Si

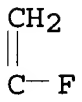
RN 7440-31-5 HCAPLUS
CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

RN 24937-79-9 HCAPLUS
CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST secondary **lithium battery** inorg particle polymer membrane; silicon particle polymer membrane **lithium battery**; carbon particle polymer membrane **lithium battery**; tin particle polymer membrane **lithium battery**; aluminum particle polymer membrane **lithium battery**

IT Secondary **batteries**
(**lithium**; polymer membranes contg. silicon and tin and aluminum and carbon particles for secondary **lithium batteries**)

IT Fluoropolymers, uses
(polymer membranes contg. silicon and tin and aluminum and carbon particles for secondary **lithium batteries**)

IT 7429-90-5, Aluminum, uses **7440-21-3**, Silicon, uses

7440-31-5, Tin, uses 7782-42-5, Graphite, uses **24937-79-9**, Poly(vinylidene fluoride)
(polymer membranes contg. silicon and tin and aluminum and carbon particles for secondary **lithium batteries**)

L72 ANSWER 4 OF 12 HCAPLUS COPYRIGHT 2002 ACS
2001:114891 Document No. 134:134156 **Nonaqueous electrolyte** secondary **battery**. Kohno, Tatsuoki; Takami, Norio; Inagaki, Hiroki; Morita, Tomokazu; Takeno, Shirou (Kabushiki Kaisha Toshiba, Japan). Eur. Pat. Appl. EP 1076373 A2 20010214, 25 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 2000-306779 20000809. PRIORITY: JP 1999-225489 19990809; JP 1999-374989 19991228.

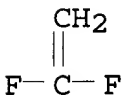
AB A **nonaq. electrolyte** secondary **battery** comprises a **nonaq. electrolyte**, a pos. electrode, and a neg. electrode contg. a neg. electrode active material, wherein the neg. electrode active material contains a composite material having a microstructure contg. a carbon-contg. phase and a crystal phase having an av. size falling within a range of between 0.01 .mu.m and 10 .mu.m.

IT **24937-79-9**, Pvdf
(binder; **nonaq. electrolyte** secondary **battery**)

RN 24937-79-9 HCAPLUS
CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 75-38-7
CMF C2 H2 F2



IT **7440-21-3**, Silicon, uses **7440-31-5**, Tin, uses **7440-66-6**, Zinc, uses
(**nonaq. electrolyte** secondary **battery**)

RN 7440-21-3 HCAPLUS
CN Silicon (7CI, 8CI, 9CI) (CA INDEX NAME)

Si

RN 7440-31-5 HCAPLUS
CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

RN 7440-66-6 HCAPLUS
CN Zinc (7CI, 8CI, 9CI) (CA INDEX NAME)

Zn

IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **battery** secondary **nonaq electrolyte**
IT Fluoropolymers, uses
(binder; **nonaq. electrolyte** secondary **battery**)
IT **Battery** anodes
Battery electrolytes
Secondary **batteries**
(**nonaq. electrolyte** secondary **battery**)
IT Carbon black, uses
(**nonaq. electrolyte** secondary **battery**)
IT **24937-79-9**, Pvdf
(binder; **nonaq. electrolyte** secondary **battery**)
IT 7440-50-8, Copper, uses
(current collector; **nonaq. electrolyte** secondary **battery**)
IT 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate 7429-90-5, Aluminum, uses 7439-91-0, Lanthanum, uses 7439-92-1, Lead, uses 7439-95-4, Magnesium, uses 7439-98-7, Molybdenum, uses 7440-00-8, Neodymium, uses 7440-03-1, Niobium, uses **7440-21-3**, Silicon, uses 7440-24-6, Strontium, uses 7440-25-7, Tantalum, uses **7440-31-5**, Tin, uses 7440-32-6, Titanium, uses 7440-33-7, Tungsten, uses 7440-36-0, Antimony, uses 7440-39-3, Barium, uses 7440-42-8, Boron, uses 7440-44-0, Carbon, uses 7440-45-1, Cerium, uses 7440-47-3, Chromium, uses 7440-55-3, Gallium, uses 7440-56-4, Germanium, uses 7440-62-2, Vanadium, uses **7440-66-6**, Zinc, uses 7440-67-7, Zirconium, uses 7440-70-2, Calcium, uses 7440-74-6, Indium, uses 9002-88-4, Polyethylene 12190-79-3, Cobalt **lithium** oxide colio2 21324-40-3, **Lithium** hexafluorophosphate
(**nonaq. electrolyte** secondary **battery**)
IT 7782-42-5, Graphite, uses
(**nonaq. electrolyte** secondary **battery**)
IT 872-50-4, n-Methylpyrrolidone, uses

(**nonaq**. **electrolyte** secondary **battery**
)

L72 ANSWER 5 OF 12 HCAPLUS COPYRIGHT 2002 ACS
2000:608507 Document No. 133:196015 Anode-active material used in **lithium** secondary **battery**. Kaneda, Junya; Takeuchi, Seiji; Watanabe, Noriyuki; Yamaki, Takahiro; Muranaka, Yasushi; Aono, Yasuhisa (Hitachi, Ltd., Japan). Eur. Pat. Appl. EP 1032062 A1 20000830, 32 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 2000-102256 20000215. PRIORITY: JP 1999-44119 19990223.

AB A **lithium** secondary **battery** comprising a pos. electrode, a neg. electrode contg. a **lithium** ion-storable/dischargeable neg. electrode-active material and a **lithium** ion conductive, **nonaq**. **electrolytic** soln. or polymer **electrolyte**, is characterized in that the neg. electrode-active material comprises particles of carbonaceous material and particles of metal and metal oxide capable of enhancing **lithium** ion interstitial diffusibility/releasability as embedded in the particles of carbonaceous material. The particles of carbonaceous materials and **lithium** ion interstitially diffusible/releasable particles are prepd. by carbonization of a mixt. thereof with MA or carbon precursor. The **battery** has a high capacity and a long cycle life, and can be used in various elec. appliances.

IT **7440-21-3**, Silicon, uses
(anode-active material used in **lithium** secondary **battery**)
RN 7440-21-3 HCAPLUS
CN Silicon (7CI, 8CI, 9CI) (CA INDEX NAME)

Si

IT **24937-79-9**, Pvdf
(anode-active material used in **lithium** secondary **battery**)
RN 24937-79-9 HCAPLUS
CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 75-38-7
CMF C2 H2 F2

IC ICM H01M004-58
ICS H01M010-40; C01G031-00
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **lithium battery** anode active material
IT **Battery** anodes
Carbonization
Petroleum pitch
(anode-active material used in **lithium** secondary **battery**)
IT Carbon fibers, uses
Carbonaceous materials (technological products)
(anode-active material used in **lithium** secondary **battery**)
IT Fluoropolymers, uses
(anode-active material used in **lithium** secondary **battery**)
IT Secondary **batteries**
(**lithium**; anode-active material used in **lithium** secondary **battery**)
IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 7429-90-5, Aluminum, uses **7440-21-3**, Silicon, uses 7440-56-4, Germanium, uses 7782-42-5, Graphite, uses 12057-17-9, **Lithium** manganese oxide limn2o4 12190-79-3, Cobalt **lithium** oxide colio2 15773-66-7, Tin silicate snsio3 18282-10-5, Tin dioxide 21324-40-3, **Lithium** hexafluorophosphate 113066-89-0, Cobalt **lithium** nickel oxide Co0.2LiNi0.8O2 113443-18-8, Silicon oxide (SiO) 178404-39-2, **Lithium** manganese oxide Li1.09Mn1.9104
(anode-active material used in **lithium** secondary **battery**)
IT **24937-79-9**, Pvdf
(anode-active material used in **lithium** secondary **battery**)
IT 7440-50-8, Copper, uses
(current collector; anode-active material used in **lithium** secondary **battery**)

L72 ANSWER 6 OF 12 HCAPLUS COPYRIGHT 2002 ACS
2000:493254 Document No. 133:107408 Process for producing **lithium** secondary **battery**. Kaneda, Junya; Watanabe, Noriyuki; Aono, Yasuhisa; Takeuchi, Seiji; Muranaka, Yasushi; Takei, Kouichi (Hitachi, Ltd., Japan; Hitachi Chemical Company, Ltd.). Eur. Pat. Appl. EP 1020944 A2 20000719, 25 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 2000-100127 20000107. PRIORITY: JP 1999-7380 19990114.
AB A **lithium** secondary **battery**, which comprises a pos. electrode, a neg. electrode contg. a **lithium** ion-storable/dischargeable neg. electrode-active material and a **lithium** ion conductive, **nonaq**.

electrolytic soln. or polymer **electrolyte** can have distinguished charging/discharging characteristics and a higher safety, when the neg. electrode material contains particles comprising carbonaceous materials and at least one of elements capable of forming a compd. with **Li**; the elements have a m.p. of at least 900.degree. and a thermal expansion coeff. of not more than 9 ppm/K at room temp.; the particles are embedded in a plurality of layers of the carbonaceous materials; the particles being subjected to a mech. treatment to make particle sizes of the particles smaller than the initial particle size in advance.

IT **7440-21-3**, Silicon, uses
(process for producing **lithium** secondary **battery**)

RN 7440-21-3 HCAPLUS
CN Silicon (7CI, 8CI, 9CI) (CA INDEX NAME)

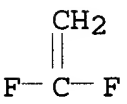
Si

IT **24937-79-9**, Pvdf
(process for producing **lithium** secondary **battery**)

RN 24937-79-9 HCAPLUS
CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 75-38-7
CMF C2 H2 F2



IC ICM H01M010-40
ICS H01M004-02; H01M004-58

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **lithium battery** fabrication; safety **lithium battery**

IT Secondary **batteries**
(**lithium**; process for producing **lithium** secondary **battery**)

IT **Battery** anodes
Coal tar pitch
Petroleum pitch
(process for producing **lithium** secondary **battery**)

IT Carbonaceous materials (technological products)
(process for producing **lithium** secondary

battery)

IT Fluoropolymers, uses
(process for producing **lithium** secondary **battery**)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 7429-90-5, Aluminum, uses 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses 12057-17-9, **Lithium** manganese oxide limn2o4 12190-79-3, Cobalt **lithium** oxide colio2 14283-07-9, **Lithium** tetrafluoroborate 21324-40-3, **Lithium** hexafluorophosphate 99637-69-1, **Lithium** nickel oxide lini2o4
(process for producing **lithium** secondary **battery**)

IT **7440-21-3**, Silicon, uses 7440-56-4, Germanium, uses
(process for producing **lithium** secondary **battery**)

IT 7440-50-8, Copper, uses **24937-79-9**, Pvdf
(process for producing **lithium** secondary **battery**)

L72 ANSWER 7 OF 12 HCAPLUS COPYRIGHT 2002 ACS
2000:34357 Document No. 132:66687 **Non-aqueous electrolytic** secondary **battery** and manufacture of the **battery**. Suzuki, Ryuta (Fuji Photo Film Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2000011997 A2 20000114, 14 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-173378 19980619.

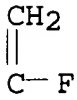
AB The **non-aq. electrolytic** secondary **battery** comprises a cathode contg. a **Li**-transition metal oxide type active mass and an anode which contains a Si-contg. compd. capable of absorbing and discharging **Li** and is produced by dispersing and kneading the Si-contg. compd. in the presence of water, applying the resultant paste to a collector, and drying the collector. The **battery** has a high energy d. and a long cycle life.

IT **24937-79-9**, Poly(vinylidene fluoride)
(binder, anode active mass contg.; **non-aq. electrolytic** secondary **battery** comprising anode contg. silicon compd. capable of absorbing and desorbing **lithium** for high energy d. and long cycle life)

RN 24937-79-9 HCAPLUS
CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 75-38-7
CMF C2 H2 F2



IT **7440-21-3**, Silicon, uses
(polycrystal; **non-aq. electrolytic** secondary **battery** comprising anode contg. silicon compd. capable of absorbing and desorbing **lithium** for high energy d. and long cycle life)
RN 7440-21-3 HCAPLUS
CN Silicon (7CI, 8CI, 9CI) (CA INDEX NAME)

IC ICM H01M004-02
ICS H01M004-04; H01M004-58; H01M004-62; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **battery** silicon compd anode active mass
IT Fluoropolymers, uses
Styrene-butadiene rubber, uses
(binder, anode active mass contg.; **non-aq. electrolytic** secondary **battery** comprising anode contg. silicon compd. capable of absorbing and desorbing **lithium** for high energy d. and long cycle life)
IT Secondary **batteries**
(**lithium**; **non-aq. electrolytic** secondary **battery** comprising anode contg. silicon compd. capable of absorbing and desorbing **lithium** for high energy d. and long cycle life)
IT **Battery** anodes
(**non-aq. electrolytic** secondary **battery** comprising anode contg. silicon compd. capable of absorbing and desorbing **lithium** for high energy d. and long cycle life)
IT 7782-42-5, Graphite, uses
(anode active mass contg. silicon compd. and; **non-aq. electrolytic** secondary **battery** comprising anode contg. silicon compd. capable of absorbing and desorbing **lithium** for high energy d. and long cycle life)
IT **24937-79-9**, Poly(vinylidene fluoride)
(binder, anode active mass contg.; **non-aq. electrolytic** secondary **battery** comprising anode contg. silicon compd. capable of absorbing and desorbing **lithium** for high energy d. and long cycle life)
IT 12190-79-3, Cobalt **lithium** oxide (CoLiO2)
(cathode active mass; **non-aq. electrolytic** secondary **battery** comprising anode

contg. silicon compd. capable of absorbing and desorbing **lithium** for high energy d. and long cycle life)

IT 7631-86-9, Silica, uses
(mixt. with silicon; **non-aq. electrolytic** secondary **battery** comprising anode contg. silicon compd. capable of absorbing and desorbing **lithium** for high energy d. and long cycle life)

IT 63784-76-9, **Lithium** silicide (Li4Si)
(**non-aq. electrolytic** secondary **battery** comprising anode contg. silicon compd. capable of absorbing and desorbing **lithium** for high energy d. and long cycle life)

IT 193072-79-6
(**non-aq. electrolytic** secondary **battery** comprising anode contg. silicon compd. capable of absorbing and desorbing **lithium** for high energy d. and long cycle life)

IT **7440-21-3**, Silicon, uses
(polycrystal; **non-aq. electrolytic** secondary **battery** comprising anode contg. silicon compd. capable of absorbing and desorbing **lithium** for high energy d. and long cycle life)

IT 7440-02-0, Nickel, uses
(silicon coated with; **non-aq. electrolytic** secondary **battery** comprising anode contg. silicon compd. capable of absorbing and desorbing **lithium** for high energy d. and long cycle life)

IT 9003-55-8
(styrene-butadiene rubber, binder, anode active mass contg.; **non-aq. electrolytic** secondary **battery** comprising anode contg. silicon compd. capable of absorbing and desorbing **lithium** for high energy d. and long cycle life)

L72 ANSWER 8 OF 12 HCAPLUS COPYRIGHT 2002 ACS

1986:12273 Document No. 104:12273 Anode for **nonaqueous** secondary **battery**. (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 60124357 A2 19850703 Showa, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1983-231736 19831208.

AB The anode mainly consists of powd. metal or alloy that reversibly absorbs alkali metal ions and PTFE resin, and is added with metal powder inert to **Li**. Typically the alkali metal is **Li**, and the anode material is selected from Sn, Al, Mg, Pb and In, or from alloys of Sn, Bi, Pb, Cd, In, Sb, Zn, and Ag. The inert metal may be selected from Ni, Fe, Cu, and Co. The anode material provides high energy d., charge-discharge property, and reliability. Thus, a mixt. of Sn powder 80, Ni powder 15, and PTFE powder 5 parts was kneaded and pressed into 0.2 mm sheet. Cutout pieces of the sheet were pressed and welded on a Ni support to form the anode. **Li** was absorbed by **electrolysis** in 1M LiClO4 in propylene carbonate. A button **battery** using

a C fluoride cathode, the anode, and the same **electrolyte** showed much lowered internal resistance during the entire discharge period, and the capacity did not decrease by the addn. of Ni powder.

IT **7440-31-5**, uses and miscellaneous
(anode, **lithium**-contg., for **nonaq**. secondary **battery**)
RN 7440-31-5 HCAPLUS
CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

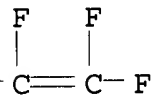
IT **7439-93-2**, uses and miscellaneous
(anodes, from metal or alloys contg., for **nonaq**. secondary **battery**)
RN 7439-93-2 HCAPLUS
CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

IT **9002-84-0**
(resin, **nonaq**. secondary **battery** anode contg.)
RN 9002-84-0 HCAPLUS
CN Ethene, tetrafluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 116-14-3
CMF C2 F4



IC ICM H01M004-62
CC 72-3 (Electrochemistry)
ST **lithium** secondary **battery** anode compn; anode **lithium** metal powder additive; fluororesin additive anode **lithium battery**
IT **Batteries**, secondary
(**nonaq**., **lithium**-contg. metal and alloy anodes for)
IT Anodes
(**battery**, **lithium**-contg. metal and alloys, **nonaq**.)
IT Antimony alloy, base

Bismuth alloy, base
Cadmium alloy, base
Indium alloy, base
Lead alloy, base
Silver alloy, base
Tin alloy, base
Zinc alloy, base
(anode, **lithium**-contg., for **nonaq**. secondary **battery**)

IT **Lithium** alloy, nonbase
(anodes, from metal or alloys contg., for **nonaq**. secondary **battery**)

IT 7429-90-5, uses and miscellaneous 7439-89-6, uses and miscellaneous 7439-92-1, uses and miscellaneous 7439-95-4, uses and miscellaneous 7440-02-0, uses and miscellaneous **7440-31-5**, uses and miscellaneous 7440-48-4, uses and miscellaneous 7440-50-8, uses and miscellaneous 7440-74-6, uses and miscellaneous
(anode, **lithium**-contg., for **nonaq**. secondary **battery**)

IT **7439-93-2**, uses and miscellaneous
(anodes, from metal or alloys contg., for **nonaq**. secondary **battery**)

IT **9002-84-0**
(resin, **nonaq**. secondary **battery** anode contg.)

L72 ANSWER 9 OF 12 HCAPLUS COPYRIGHT 2002 ACS
1985:618285 Document No. 103:218285 Anode for secondary **battery** with **nonaqueous electrolyte**.
(Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 60124369 A2 19850703 Showa, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1983-231735 19831208.

AB The title anode is prepd. by sandwiching a Ni grid between 2 films of alkali metal ion-occluding metal or alloy powder and PTFE [**9002-84-0**]. Thus, an anode was prepd. by mixing 5 wt.% Sn powder and PTFE powder, pressing the mixt. between rollers to form 2-mm-thick films, placing an expanded Ni grid between 2 films, and by rolling the combination. A **battery** contg. this anode, a **Li** cathode, glass-filter separator, and M LiClO4 in propylene carbonate **electrolyte** had on charging and discharging a better discharge capacity than a **battery** contg. a Ni grid sandwiched between 2 PTFE films.

IT **7440-31-5**, uses and miscellaneous
(anodes contg., PTFE, for **batteries**)

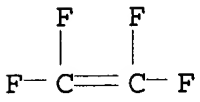
RN 7440-31-5 HCAPLUS
CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

IT **9002-84-0**
(anodes, contg. tin, for **batteries**)
RN 9002-84-0 HCAPLUS
CN Ethene, tetrafluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 116-14-3
CMF C2 F4



IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST tin **lithium nonaq electrolyte** **battery**; anode **battery** tin PTFE
IT **Batteries**, secondary
(**lithium**-tin, of high discharge capacity)
IT Anodes
(**battery**, PTFE, contg. tin)
IT **7440-31-5**, uses and miscellaneous
(anodes contg., PTFE, for **batteries**)
IT **9002-84-0**
(anodes, contg. tin, for **batteries**)

L72 ANSWER 10 OF 12 HCAPLUS COPYRIGHT 2002 ACS
1984:164300 Document No. 100:164300 A **lithium** halide additive for a **nonaqueous battery**. (Union Carbide Corp., USA). Jpn. Kokai Tokkyo Koho JP 59005570 A2 19840112 Showa, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1983-105636 19830613. PRIORITY: US 1982-388478 19820614.
AB A **Li** halide(s) such as LiCl, LiF, LiBr, and/or LiI is added to the **electrolyte** of a **nonaq**. **battery** consisting of a **Li** anode, liq. org. **electrolyte**, and FeS2 or MnO2 cathode to improve the voltage level in pulse discharging. Optionally, an FeS2 cathode contg. CuO, Bi2O3, Pb2Bi2O5, Pb3O4, and/or CoS2 may be used. Addnl., the cathode may contain a conductor and binder.
IT **7439-93-2**, uses and miscellaneous
(**battery**, **nonaq**., **lithium** halide additive for **electrolyte** for)
RN 7439-93-2 HCAPLUS
CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

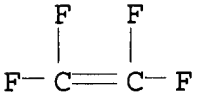
IT **7440-66-6**, uses and miscellaneous **9002-84-0**
(cathode contg., in **nonaq. battery**)
RN 7440-66-6 HCAPLUS
CN Zinc (7CI, 8CI, 9CI) (CA INDEX NAME)

Zn

RN 9002-84-0 HCAPLUS
CN Ethene, tetrafluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 116-14-3
CMF C2 F4



IC H01M006-16
CC 72-3 (Electrochemistry)
ST **lithium** halide additive **nonaq battery**; chloride **lithium** additive **nonaq battery** ; fluoride **lithium** additive **nonaq battery**; bromide **lithium** additive **nonaq battery**; iodide **lithium** additive **nonaq battery**; iron sulfide cathode **nonaq battery**; manganese oxide cathode **nonaq battery**
IT **Lithium** halides
(additive, for **electrolyte** of **lithium nonaq. battery**)
IT Carbon black, uses and miscellaneous
(cathode contg., in **nonaq. battery**)
IT **Batteries**, primary
(**nonaq.**, **lithium** halide additive for **electrolytes** on)
IT 7447-41-8, uses and miscellaneous 7550-35-8 7789-24-4, uses and miscellaneous
(additive, for **electrolyte** of **lithium nonaq. battery**)
IT 10377-51-2
(additive, for **electrolyte** of **lithium nonaq. battery**)
IT **7439-93-2**, uses and miscellaneous
(**battery**, **nonaq.**, **lithium** halide additive for **electrolyte** for)
IT **7440-66-6**, uses and miscellaneous **9002-84-0**

(cathode contg., in **nonaq. battery**)

IT 1313-13-9, uses and miscellaneous
(cathode, in **lithium nonaq. battery** with **electrolyte** contg. **lithium** halides)

IT 12068-85-8
(cathode, with and without additives, in **lithium nonaq. battery**)

IT 33454-82-9
(**electrolyte** contg., in **nonaq. battery**)

IT 1304-76-3, uses and miscellaneous
(iron disulfide cathode contg. for **lithium nonaq. battery**)

IT 1314-41-6 1317-38-0, uses and miscellaneous 12013-10-4
12356-42-2
(iron disulfide cathode contg. for **lithium nonaq. battery**)

L72 ANSWER 11 OF 12 HCAPLUS COPYRIGHT 2002 ACS

1983:169332 Document No. 98:169332 Cell having mixed solid cathode materials for controlling cell expansion on discharge. Bubnick, Gerald Frank (Union Carbide Corp. , USA). Eur. Pat. Appl. EP 68230 A1 19830105, 18 pp. DESIGNATED STATES: R: BE, CH, DE, FR, GB, LI. (English). CODEN: EPXXDW. APPLICATION: EP 1982-105118 19820611. PRIORITY: US 1981-278903 19810629.

AB A **battery** with a substantially const. phys. configuration during discharge was made from a cathode mix having a volumetric expansion practically equal to the volumetric contraction of the anode. Thus, a button-type cell was made with a **Li** anode disk and a bonded cathode mix of CuO and FeS2 in a **nonaq. electrolyte** of dimethoxyethane 30, 3-methyl-2-oxazolidone and 1,3-dioxolane 40% contg. 1M LiCF3SO3. A separator was placed between the anode and cathode, and a nylon gasket insulated the cover from the container.

IT **7439-93-2**, uses and miscellaneous
(anodes, **battery**)

RN 7439-93-2 HCAPLUS

CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

IT **7440-66-6**, uses and miscellaneous **9002-84-0**
(cathodes contg., for **lithium battery**)

RN 7440-66-6 HCAPLUS

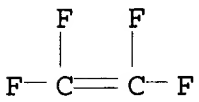
CN Zinc (7CI, 8CI, 9CI) (CA INDEX NAME)

Zn

RN 9002-84-0 HCAPLUS
CN Ethene, tetrafluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 116-14-3
CMF C2 F4



IC H01M004-36; H01M006-50
CC 72-3 (Electrochemistry)
ST **battery lithium** org **electrolyte**; cupric oxide cathode **lithium battery**; iron sulfide cathode **lithium battery**
IT Carbon black, uses and miscellaneous
(cathodes contg., for **lithium battery**)
IT **Batteries**, primary
(**lithium**, solid cathode materials for)
IT **7439-93-2**, uses and miscellaneous
(anodes, **battery**)
IT 1317-38-0, uses and miscellaneous **7440-66-6**, uses and miscellaneous **9002-84-0** 12068-85-8
(cathodes contg., for **lithium battery**)

L72 ANSWER 12 OF 12 HCAPLUS COPYRIGHT 2002 ACS
1979:514496 Document No. 91:114496 Metallic reducing additive for solid cathodes used in **nonaqueous batteries**. Kronenberg, Marvin Lee (Union Carbide Corp., USA). Ger. Offen. DE 2848962 19790531, 24 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1978-2848962 19781111.
AB In a **nonaq. battery** for transistorized devices, the cathode contains a larger amt. of graphite and/or C and a smaller amt. of a metallic reducing agent (incorporated throughout the cathode) which is sufficient to reduce any materials in the **battery** which are more cathodic than the active cathode material, and of course with respect to the anode. The metallic reducing agent is a discrete material which is in elec. and ionic contact with the cathode and is selected from Zn (preferably), V, Mn, Cr, Fe, Cd, In, Sn, Pb, Zr, Ti, **Li**, Na, K, Mg, Al, and Ca. The active cathode material is chosen from CFx, V2O5, WO3, MoO3, Pb oxide, Co oxide, MnO2, Cu oxide, CuS, CoS2, In sulfide, Fe sulfide, NiS, Ag2CrO4, Ag3PO4, and CuSO4. The anode is chosen from **Li**, Na, K, Ca, Mg and their alloys. The **electrolyte** is an org. solvent or mixt. of org. solvents. For example, a planar **battery**, with a metal cap for closure, contains a disk-shaped **Li** anode, an FeS2 cathode and **electrolyte** of LiCF3SO3 soln. in dioxolane 40,

dimethoxyethane 30, and 3-methyl-2-oxazolidone 30% with a trace of dimethylisoxazole. The cathode collector consists of a Ni grid and the separator of nonwoven polypropylene. In the case of a drain of 1.2 mA, the **battery** showed a voltage of 1.8 V. Within 15 min, the outlet voltage fell to .apprx.1.4 V and stayed there upon further discharge. The addn. of Zn powder (as reducing agent) and C black to the FeS2 improved the qualities of the **battery**.

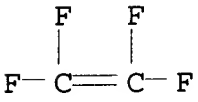
IT **7439-93-2**, uses and miscellaneous
(anode, for **nonaq. battery**)
RN 7439-93-2 HCAPLUS
CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

IT **9002-84-0**
(binder, in primary **nonaq. battery**)
RN 9002-84-0 HCAPLUS
CN Ethene, tetrafluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 116-14-3
CMF C2 F4



IT **7440-31-5**, uses and miscellaneous
(reducing additive, for primary **nonaq. battery**)
RN 7440-31-5 HCAPLUS
CN Tin (8CI, 9CI) (CA INDEX NAME)

Sn

IT **7440-66-6**, uses and miscellaneous
(reducing agent, for solid cathode in primary **nonaq. battery**)
RN 7440-66-6 HCAPLUS
CN Zinc (7CI, 8CI, 9CI) (CA INDEX NAME)

Zn

IC H01M004-62; H01M004-58; H01M006-16
CC 72-2 (Electrochemistry)
ST **battery** primary metal reducing agent; zinc reducing agent primary **battery**; cathode reducing agent primary **battery**
IT Carbon black, uses and miscellaneous
(in primary **nonaq. battery** with metal reducing additive)
IT Reducing agents
(metals, for cathodes in primary **nonaq. batteries**)
IT **Batteries**, primary
(**nonaq.**, for transistorized devices, metallic reducing additive for use in)
IT Cathodes
(**battery**, metal reducing additives for, in **nonaq. electrolytes**)
IT **7439-93-2**, uses and miscellaneous
(anode, for **nonaq. battery**)
IT **9002-84-0**
(binder, in primary **nonaq. battery**)
IT 7440-02-0, uses and miscellaneous
(cathode collector, for primary **nonaq. battery**)
IT 1317-38-0, uses and miscellaneous
(cathode, for primary **nonaq. battery**)
IT 12068-85-8
(cathode, with metal reducing additive, for **nonaq. battery**)
IT 33454-82-9
(**electrolyte**, for primary **battery**)
IT 110-71-4 300-87-8 646-06-0 19836-78-3
(in primary **nonaq. battery**)
IT 7440-44-0, uses and miscellaneous 7782-42-5, uses and miscellaneous
(in primary **nonaq. battery**, with metal reducing additive)
IT 7439-89-6, uses and miscellaneous **7440-31-5**, uses and miscellaneous
(reducing additive, for primary **nonaq. battery**)
IT **7440-66-6**, uses and miscellaneous
(reducing agent, for solid cathode in primary **nonaq. battery**)
IT 9003-07-0
(separator, for primary **nonaq. battery**)
IT 12597-69-2, uses and miscellaneous
(wool, in primary **nonaq. battery**)